Computer

Dandelion

Adventures

Jonathan's Computer Centers

Class 1

Course Overview
Terms
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What is a diskette?
Using a disk drive
Running your Apple
Computer Adventures Disk
Using the Apple Keyboard, Part 1
Stars
Using the Apple Keyboard, Part 2

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✓Bring a blank disk to next class
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✓Read Steps in Programming, pg 37 and
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Lo-Res Graphics
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(continued)

Revised 9/83

Class 3

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        Use the Lo-Res Graph paper to draw a picture. Then write a
        program to draw the picture following the directions given
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        Menu Driven Design
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        Enter and print crossword puzzle
                using Crossword Magic
        Introduction to Word Processing, Part II
   Enter and edit a document
    Summary
        Award Certificates

Jonathan's
Computer Centers

present
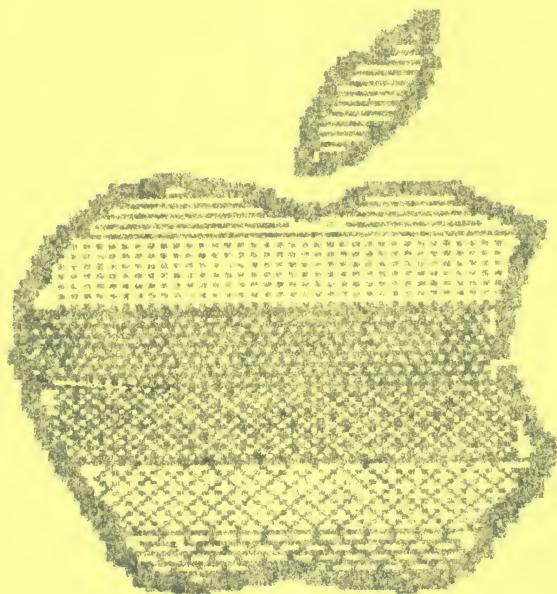
Computer Adventures

Created by

Dandelion Associates
Alex and Nancy May

CONTENTS

INTRODUCTION AND TERMINOLOGY

BASIC — Beginners All-Purpose Symbolic Instructional Code is the language of most microcomputers.

BINARY CODE — A code that uses only two characters, 0 and 1.

BUG — A mistake in a computer program.

BYTE — Eight binary digits in a row that operate as a unit. Bytes are the smallest addressable units in a system.

CENTRAL PROCESSING UNIT — The brain of the computer which controls and supervises the whole computer. The Apple uses a 6502 processor.

CHARACTER — Any symbol that you can type on the computer keyboard; letter, number, punctuation or space.

COMMAND — An instruction to the computer to perform a task. Computers respond to immediate commands and to deferred commands.

COPYA — Apple Computer provides this program to you on the SYSTEM MASTER disk. When you use it, it initializes a blank disk and then transfers a copy of another disk onto the one it initialized.

CURSOR — A movable character displayed on the screen, used to show where the next input will print. Often the cursor flashes.

DEBUG — To find and remove mistakes from a computer program.

DELETE — This disk command can be used to remove a file name from a disk directory. It has the same effect as actually removing the file from the disk.

DISKETTE — A flexible floppy disk that stores information written magnetically on its surface.

DISPLAY — Pictures or words on the computer screen.

DOS — Abbreviation for Disk Operating System. The DOS is delivered to you as part of your SYSTEM MASTER disk. You transfer it automatically to another disk whenever you initialize.

ENTER — To type information into the computer.

FID — The File Developer is another program provided by Apple Computer as part of your SYSTEM MASTER disk. It gives you utility programs to copy individual files from one disk to another.

HARD COPY — A printed paper copy of a computer program and/or images that appear on the display screen; printout.

HARDWARE — The computer machinery; parts which can be seen and touched.

INIT — Another DOS command. This one prepares new disks to be used by your computer. Usually you will initialize a disk only once in its lifetime.

INPUT — Information given to the computer by the operator, usually through the keyboard. Other devices such as light pens and card readers can input information.

INTERFACE — A piece of equipment that links a peripheral to the computer.

KEYBOARD — A set of keys on

which to type information or instructions for the computer.

LISTING - A printing of the commands arranged in sequence for a program. May be hardcopy or on the screen.

LOAD - A DOS command which reads a program on the disk and recreates it in RAM or memory.

MEMORY - The computer storage area ; takes in information, keeps it, and at a later time, returns the information for use.

MENU - A list of choices on the screen from which the operator may select.

OPERATOR - The person who uses the computer, often the person for whom the program was designed.

OUTPUT - The results of the computer's processing. If the computer knows the answer but doesn't share it with the operator, no one receives any benefit from the computer's work. Output provides a channel for people to learn what the computer calculated.

PERIPHERAL - An attachment for a computer, such as a disk drive or printer. Apple BASIC uses PR as an abbreviation for peripheral.

PRINTOUT - A listing or picture made by a printer onto paper from signals received from the computer; hard copy. Invoices, paychecks and airline tickets could all be examples of computer printouts.

PROGRAM - Instructions to a computer written in a special form that tells the computer what is to be done, how it is to be done and what to do with the

results.

RANDOM ACCESS MEMORY (RAM) - Circuits which hold replaceable information and instructions created for or with a microcomputer. Information in RAM disappears whenever the power is turned off.

READ ONLY MEMORY (ROM) - Circuits with permanent information and instructions for a computer. Information in ROM stays in memory even when the power is switched off.

RUN - You have two RUN commands as part of your Apple system. With a program in memory, simply type RUN and press RETURN. The program will begin to work for you. To move a program from the disk to memory, type RUN followed by the program name on the disk. Then press RETURN. The program will move from the disk to memory and then carry out its work.

SAVE - After writing a program, you will want to store it on a disk for future use. The SAVE command with a name for the program will do this job for you.

SCREEN - The place where you see words and images on a computer.

SOFTWARE - Programs for the computer.

SYNTAX - Rules for arranging commands in a computer language.

Languages

Communication requires a structured system which can be understood by both sides exchanging information. Human languages have evolved to provide that structure among people. In order to have communication between people and machines such as computers, a language system had to be invented.

Depending on the definition given to the word language and also depending on who is doing the counting, more than one hundred computer languages already exist. Some of them are quite simple to learn and use; others require a great deal of study and practice before one has competence with them. Computer languages separate into two major categories; high level and low level.

A high level language is one which uses ordinary human words to allow the computers and humans to talk to each other. English is the most common human language base for high level computer languages. Additional programs which interpret the high level language for the computer must be included in the program package which contains the language. Languages such as COBOL and BASIC are accompanied by compilers or interpreters. These programs change the high level commands into low level language commands which the machine can understand. The compiler or interpreter also translates the low level language back into the high level one used by the computer operator or programmer.

The language closest to the computer's native tongue is machine language. This language is written entirely in numbers and it contains only two characters in its number system, 1 and 0. All information ultimately must be represented to the computer in this binary code. Obviously, most humans limited to a two character alphabet would have a great deal of trouble communicating complex ideas accurately and efficiently.

One layer above machine language in the hierarchy of computer languages we find assembly language. This language provides a set of abbreviations and initials which have more meaning to humans than strings of 1's and 0's. For example, a common assembler task is to load the accumulator with a value. The assembly language command for loading the accumulator is LDA and the machine language command for the same action is 00111010. LDA is a little easier to remember then the sequence of eight 1's and 0's in a byte. While assembly language represents a big improvement over machine language as far as human comprehension is concerned, it still requires highly specialized thinking and study. Assembler is considered a low level language by most people.

In 1964 at Dartmouth University, two professors named

Kemeny and Kurtz developed a high level language to help their students learn about programming computers. They considered their language to be a Beginner's All-purpose Symbolic Instruction Code and they dubbed it, BASIC. It has since become the most common language available on microcomputers and even the giants such as IBM and Burroughs Corporation offer BASIC on their mainframes today. BASIC has become much more than just a beginner's language; many sophisticated applications are written entirely in BASIC by professional programmers who work almost entirely in this one language. Common commands in BASIC include PRINT, CLEAR, INPUT, RUN and STOP; all of these are plain English words which are very understandable.

Some of the other high level languages are Pascal, FORTRAN, Lisp, Forth, and SNOBOL. Computer scientists are always working on new and better languages designed to complete specific tasks efficiently.

```
              P
    STORAGE GRAPHICS
    P   U       I
  PRINT    B   N
    Q   PASCAL  T
A   C   U    S  E         D
B   E   T MAINFRAME  K    E
A   S       C     I     E B
CASSETTE       BINARY   U
U   Q     RAM  Y  I   BUG
S   R     Q    T       Q
  S L   COMPUTER       A
MODEM   U        MICRO
  F   D PROGRAM    E    D
  T       S       N
  W       Q   CIRCUIT
HARDWARE      H
  R   I       INPUT
  E   S       P
    KILO
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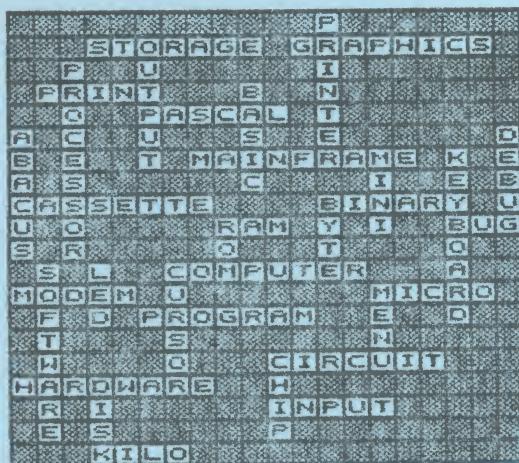
ACROSS CLUES

2. Area used to save information and programs for later use

4. Functions which provide illustrations for programs

6. BASIC command to place messages on the screen or printer

8. Computer language designed to help students learn about computers; named after 17th century mathematician

11. Term for the largest of computers

14. Tape storage device

15. Consisting of only two parts

16. Random access memory (acronym)

17. Problem in a program

20. Device for manipulating words, crunching numbers, and doing repetitive tasks rapidly

21. Device for connecting two computers over a telephone line

22. Term to designate a small computer

23. Set of instructions that tells a computer what to do

24. Electronic configuration which the computer uses for doing its job

25. Part of the computer which you can see and touch

27. Information given to a computer so it can complete a task

28. One thousand, also K

DOWN CLUES

1. Device which provides a hardcopy printout of the computer's results

3. Information which the computer gives as a result of its work

5. The main integrated circuit which directs the computer in all its tasks

7. Possibly the best known of all computer languages

9. First mechanical aid developed for computations; about 3000 B.C.

10. To get rid of the problems in a program

12. Family name for medium sized computers

13. Common input device on most micro computers

15. Amount of storage space needed for one character

16. Non-volatile memory; read only memory. Its contents cannot be changed directly

18. The programs which guide a computer through its tasks

19. Light emitting diode

20. Screen indicator which shows where next character will be displayed

22. A program page or screen which gives an operator options or choices

24. Small silicon wafer which contains printed electronic circuits

26. Storage medium for electronic data; a round, flat platter similar to a record in appearance

STORAGE GRAPHICS
PRINT
PRINT
PASCAL
B
PROCESSOR
MAINFRAME
ABACVS
CASSETTE BINARY
RAM
COMPUTER
MODEM MICRO
PROGRAM
CIRCUIT
HARDWARE
INPUT
KILO
DEBUG
BUG
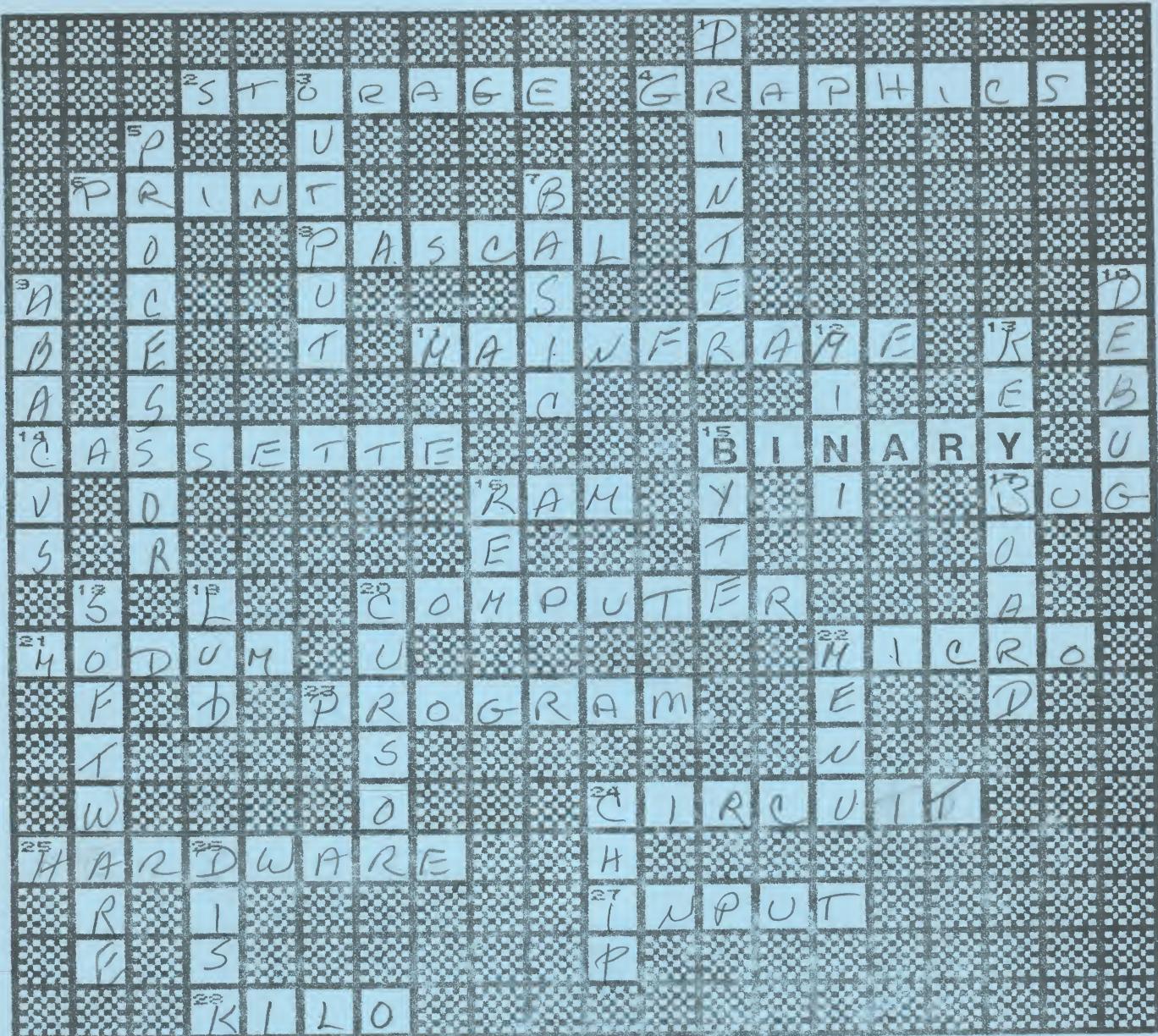
Computer Terms

COMPUTER
OPERATIONS

MODEM

MONITOR

DISK DRIVE

PRINTER

KEYBOARD

GRAPHICS TABLET

SPEECH RECOGNITION

COMPUTER HARDWARE

14
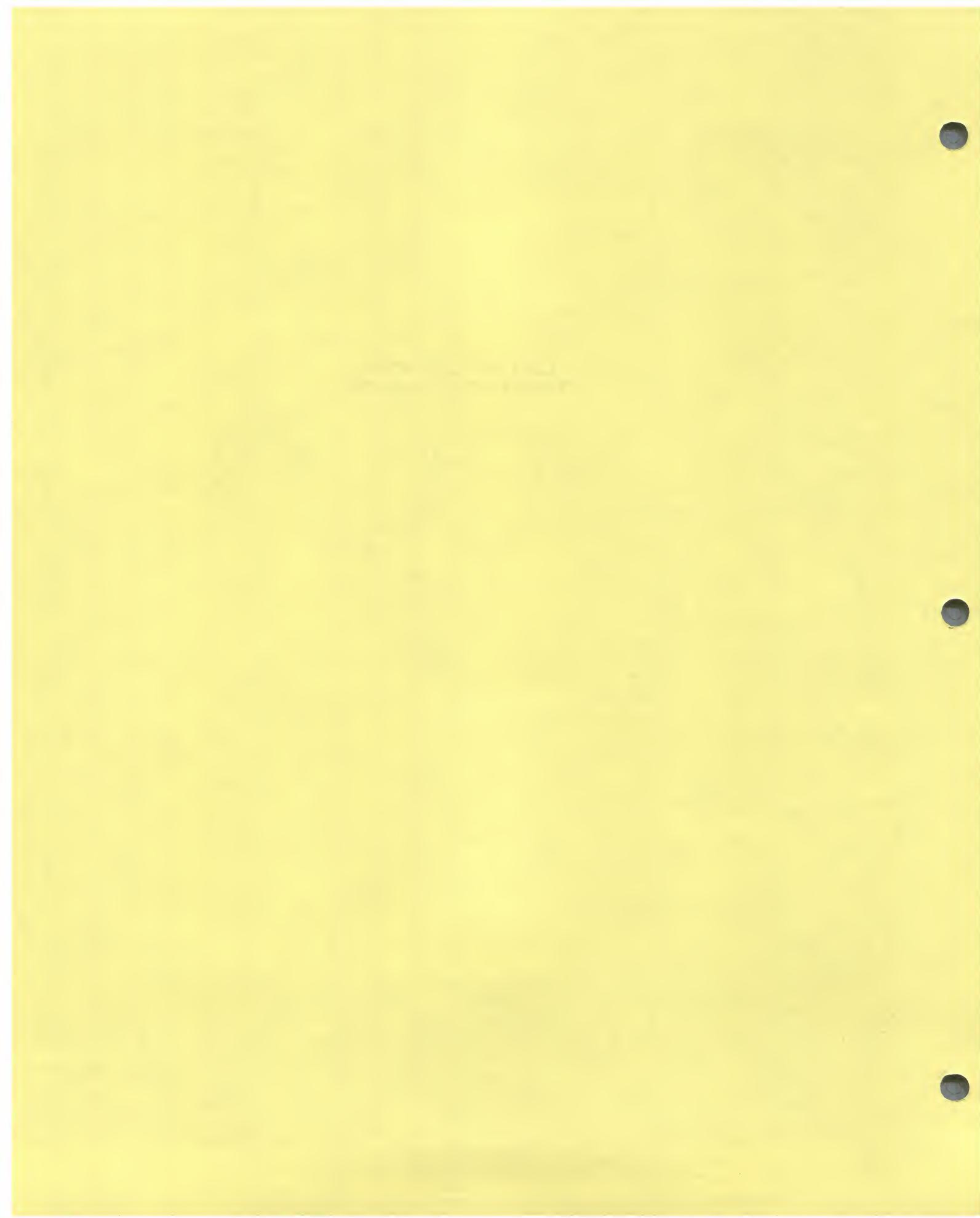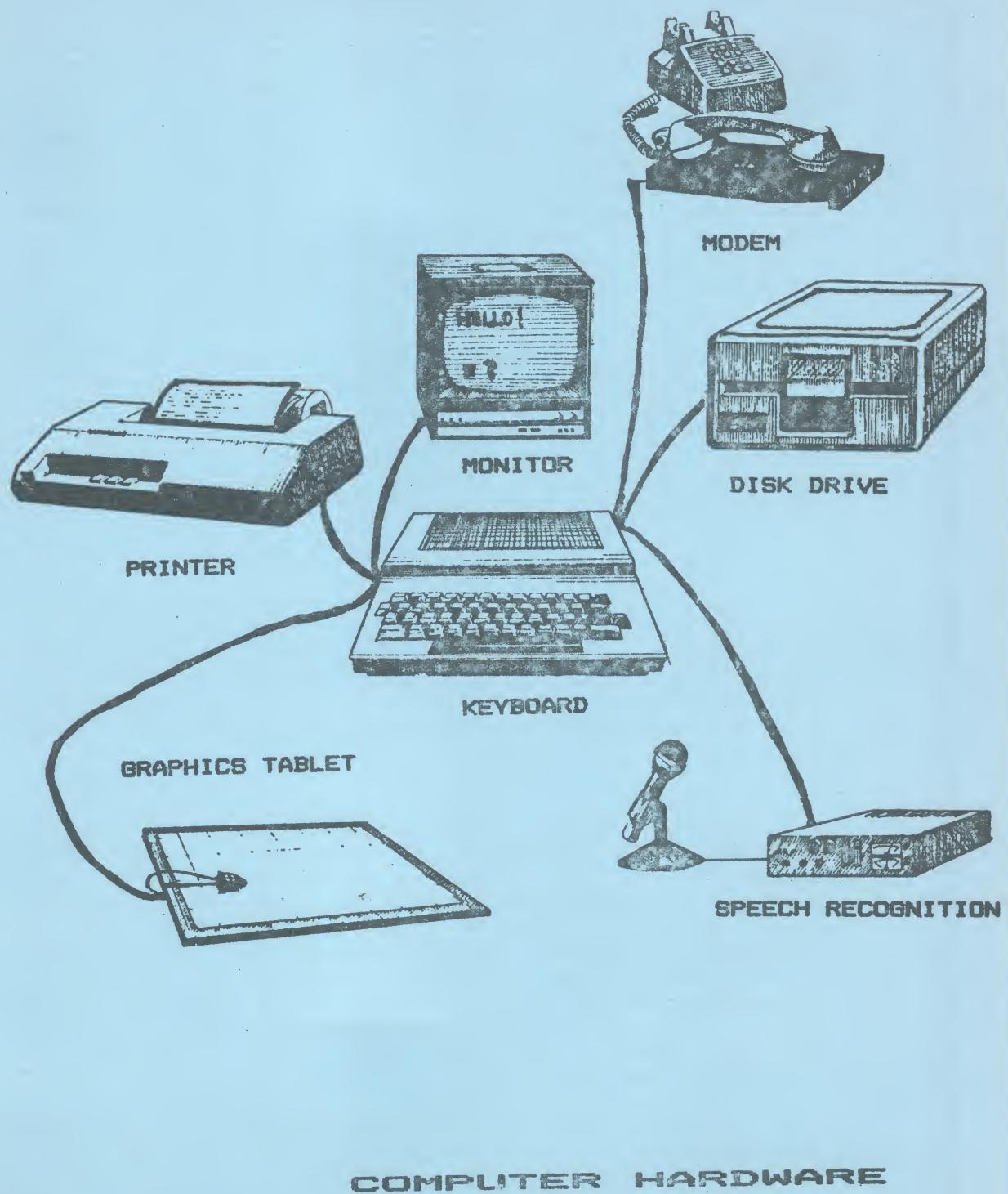
SYSTEM REQUIREMENTS

Most people who decide to set up their own personal computer system for home or work usually start with the minimum hardware and then add more as they need it. The very least which anyone would need is dictated by the operation and purpose of all computers. In order to function at all, a computer must have a way to receive information from a person and a way to give information back.

The information the computer receives is called INPUT and the information given back is called OUTPUT. The most common INPUT device for small computers is the keyboard. Keyboards on the majority of small computers resemble the standard typewriter keyboard with a few extra keys for computer functions. OUTPUT is usually done on the video screen. A usual name for the screen device is "monitor".

Minimum Requirements

So, the minimum requirements for any computer system would be the computer itself, and a keyboard and monitor. Any computer system you might purchase would include the first two. Some automatically include the monitor as well. Others, such as the Apple, the Atari, and the Commodore VIC-20, allow you to use your home television as a monitor.

Storage Devices

Before long, the computer user decides that more equipment is needed. An additional piece of equipment attached to the computer is referred to as a peripheral device. Peripheral as an adjective means located away from the center. Consider the computer as the center and anything attached to it becomes a peripheral device. The first peripheral added to the computer is almost always a data storage device. Actually, many computerists purchase a data storage device at the same time they buy the computer because they know they will need it anyway. Cassette recorders and disk drives are the usual storage devices.

The purpose of the storage device is to provide a place for programs and data to be kept when the computer is turned off. The active memory devices in the computer will hold information as long as the power is on. When the power goes off, the computer 'forgets' a lot of what it knows while the power is on. To compensate for this, programs and data files are stored on tape or disks. The method of storage is similar to that used to record music and save it on magnetic tape. Storing data and programs is a real advantage. Without the storage, the operator would have to re-type all programs and information each time the computer was turned on.

Other OUTPUT

Computers are intended to add convenience to life. Sitting in front of a monitor and copying information onto a piece of paper isn't very convenient. The next peripheral added to a system is a printer. Printers come in several varieties. The least expensive is the thermal printer, but it has a hidden cost. Thermal paper is more expensive than regular paper. A thermal printer works by burning the coating off of a specially treated paper so that a printed image is revealed.

Dot-matrix printers seem to be the most versatile and popular right now. This paper is printed with a dot-matrix printer. If you examine the letters closely, especially the 'k' and the 'x', you will be able to see the tiny dots which are printed to create each letter. One advantage to the dot matrix printer is the ability to print various type faces without any hardware changes. The dot matrix can also be used to print graphics. Several pictures and graphs in this booklet were produced on the same printer which did this page of text.

Some computers can actually use a standard IBM Selectric typewriter, but the adapter is very expensive. To achieve typewriter quality print and avoid the computer look, some businesses will use a daisy wheel printer. The daisy wheel is a printing element with each character at the end of spine which resembles a daisy petal. The wheels are interchangeable; they work like the elements on the IBM Selectric.

In addition to printers, graphics plotters are used to output charts, graphs, blueprints, and electrical schematics. Plotters have the ability to produce multi colored charts through the use of interchangeable pens. Some very sophisticated printers and plotters actually spray ink onto the page. They can also spray different colors of ink. Currently, these devices are not priced within the range of most homes or businesses.

Other INPUT

Graphics Tablets

Before the computer can output a picture, it must have the picture stored in its memory. Several methods of putting pictures into memory through programming exist. An easier way, though, is to add another peripheral. Graphics tablets which plug into the computer provide access to the memory for creating and then storing pictures. The operator simply draws or traces on the tablet and watches the image appear on the screen. Once there, the picture can be stored on the disk or cassette tape and then printed onto paper.

Some of the tablets are quite inexpensive, less than $300 including programs; and they have a practical value for some people.

Speech Recognition

Peripherals now exist within a reasonable price range that allow the operator to communicate with the computer through normal speech. Not only does the computer listen and respond to the commands, it can also talk back. These speech devices have proven valuable for working with the handicapped. Blind and paralyzed programmers can use their computers effectively with speech recognition devices.

These devices also help the non-typist to use the machine. For some people, the keyboard represents a very real obstacle to using a computer. Busy adults who do not know how to type often don't have the time to learn. This prevents them from using a computer personally. Instead they have to have someone else type for them. Adding a speech device and appropriate software to the computer, enables them to become independent users of the machine.

Tele-communications

Eventually some computerists decide to communicate with other computers. Electronic mail is an example of tele-communications between computers. A device called a modem is used between the computer and the telephone lines to translate the computer's signals into signals which can be transmitted over the phone. On the receiving end, another modem translates the phone signals back into computer signals.

Using a modem for tele-communications also allows users to talk to data bases which provide electronic shopping services, airline and restaurant reservations, and information retrieval. The Dow Jones stock reports are readily available to anyone who has a modem and a small computer.

Still More

Almost every day it seems someone introduces a new peripheral which adds versatility to the computer. Bar wand readers which can interpret the universal pricing codes on products already exist for small computers. Environmental control systems which allow the home owner or business owner to pre-program thermostat settings and timed sequences for lights to be on or off are available. The tilt of solar panels and the flow of the liquid in the panels can be controlled by computer. It may not be too long before a computer controlled robot is doing many of the jobs and chores around the house or store.

COMPUTER OPERATIONS

Disk Care

The most fragile part of the personal computer system may very well be the diskette which stores the programs and the information they produce. These small, flexible diskettes are referred to as 'minis' and 'floppies' because of their size and flexibility.

Each 5 1/4" diskette will hold the equivalent of eighty to ninety double-spaced type written pages of information. The disks don't require much room in a file cabinet, and they are fairly easy to catalog for later use. However, they do require special care. They do not like smoke, dust, dirt, heat or magnetic fields. A finger print can ruin a disk so that it is no longer reliable for storing important information.

When handling diskettes, be especially careful not to touch the surface of the disk inside of its square black casing. If the disk is not in the disk drive, it should be in the protective envelope which comes with it. Keeping the disk in its envelope helps protect it from dust and dirt.

Each disk has a printed label on the top corner. Holding the disk so that your thumb is on this label ensures that you are loading the disk properly when you place it in the drive. Be gentle. If you have to force the diskette, stop. Look in the drive to see what is in the way. Make sure that the drive door is completely open and that no other disk is already in there. Try again. The accompanying drawing shows how to place the disk in the drive.

USING YOUR DISK SYSTEM

When you start to use your disks, you'll soon find a need to be able to prepare new disks for use, to copy entire disks. to examine disks to learn what files and programs they contain, to delete files and to copy single files rather than an entire disk. Managing your disk library requires a little organization on your part, but you do get some help from the DISK OPERATING SYSTEM or DOS. Some people call this DEE – OH – ESS, pronouncing each letter and others say DOSS, as if it were a word which rhymes with boss. You decide which you prefer. Both will be understood by other people who use computers.

The Disk Operating System consists of a set of commands which Apple provides for you on the SYSTEM MASTER disk. The commands are used to prepare new disks, load and save files, delete files. and also to read information from the disk and write information out to the disk. You will want to learn

how to use the disk first. If you decide to write your own programs, you will probably need to learn how to use the read and write commands.

SAVE and LOAD

Fortunately, most of the DOS commands are named so that you can almost guess their functions just from the names. SAVE is a command which creates a copy of a program you have in memory on the disk in your drive. In effect, the program is saved for your future use. To use this command you must provide a name for the program you are saving so that the DOS can record the entry and retrieve it for you later. If your program were named ROCKETSHIPS, the command would look like this:

SAVE ROCKETSHIPS

When you type the command and the name above, the computer will assign space on the disk to hold the program, create a copy of the program you have in memory, (RAM), and give it the name you used. The LOAD command is used to get a program from the disk back into memory. You would type the following:

LOAD ROCKETSHIPS

Once you press RETURN the computer goes to the disk, finds the location of the program with the name you stated and creates a copy of that program in memory so that you can use it or change it. Under normal circumstances, only one program at a time fits in memory.

INIT

However, there is another command we must discuss. When you purchase a box of new disks, they are not ready to be used in your computer. You must prepare them for the computer with the INIT command. INIT is short for INITIALIZE. This means that the first time you use a disk, you go through initial steps to make it work. The disk needs to have a specific pattern of circles and lines drawn on it for information storage. Each computer manufacturer has created a unique pattern for the disks to use. This is why you must do the initializing instead of buying disks which are ready for use.

STEPS IN INITIALIZING

Getting disks ready to use is fairly easy. You must have an already initialized disk and a blank disk. Apple provides the initialized disk when they give you the SYSTEM MASTER with your disk drive. You purchase the blank disks as you need them.

1. Put an initialized disk in your drive and turn on the power. This will BOOT the disk and load the

DOS in memory.

2. Write a HELLO program or use one that is already
   written such as FREE SPACE which is given to all
   students in the COMPUTER ADVENTURES course.

3. Put the blank disk in your drive and type INIT
   HELLO; then press RETURN and wait about 90
   seconds. You'll notice that the disk drive is
   making a little noise and that the disk is
   whirring. The DOS is busy drawing the pattern of
   tracks and sectors on the disk. It is also
   installing a copy of itself on the new disk. You
   can use any initialized disk to initialize
   another. Most people start with their SYSTEM
   MASTER, but then they put that disk away and use
   one they have initialized themselves to continue
   preparing other disks.

Once you have initialized the disk, it is ready to
receive programs and files for storage. You can use it with
your word processor or other programs that store information
on disks. You can also write and save your own programs on
the disk.

Usually you will only initialize a disk once in its
lifetime. Initializing destroys any information on a disk
that it contains. If you plan to initialize a used disk, be
sure that you no longer need the files and programs that
might be on it.

OTHER DOS UTILITIES

Besides the DOS commands, you have two programs to help
you use DOS. The COPYA program and the FID program can make
managing your disk library much easier. With COPYA you can
produce exact duplicates of your disks. COPYA first
initializes the new disk for you and then copies the
contents of the first disk onto the second. Of course, COPYA
does not work with many of the commercially protected disks.

FID stands for file developer. It allows you to copy
selected files from one disk to another. It does not
initialize the second disk for you; the disk must be ready.
FID has several convenient features to help you. This is a
binary program and it is on your SYSTEM MASTER. You should
boot your SYSTEM MASTER, type BRUN FID, and give it a try so
that you learn its features.

Don't touch this part

Label

Notch

DIRT and DISKS

READ/WRITE HEAD

Smoke

Fingerprint

Dust

Human Hair

Your DISK
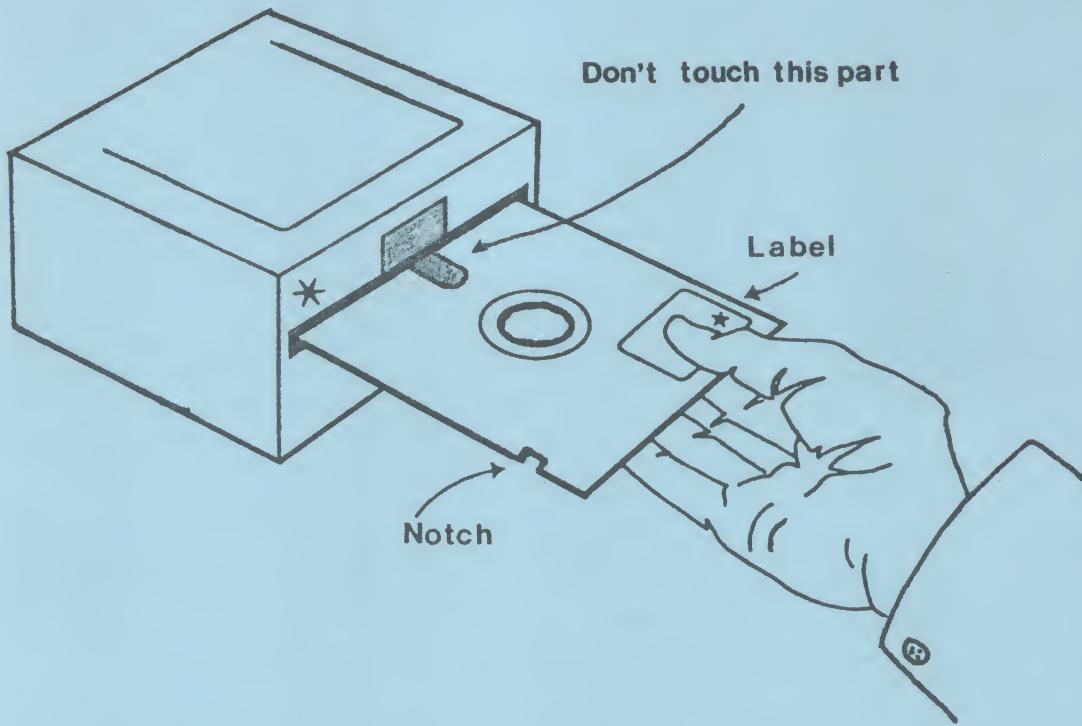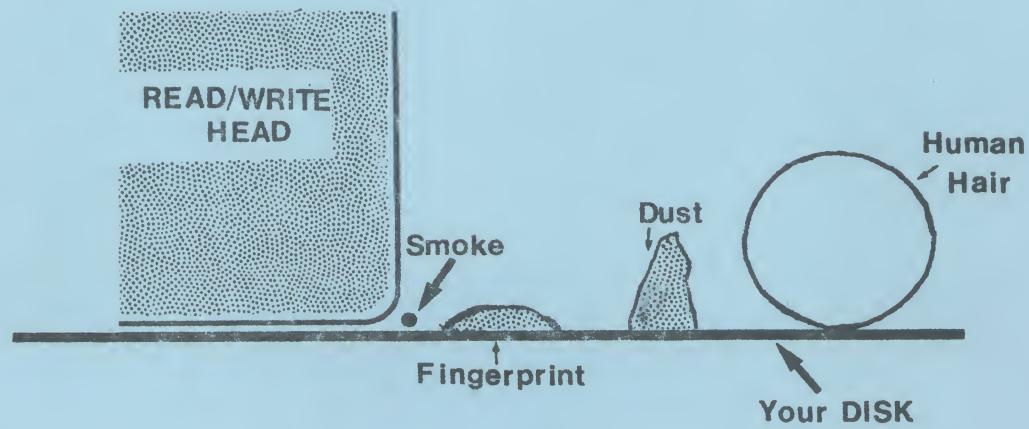
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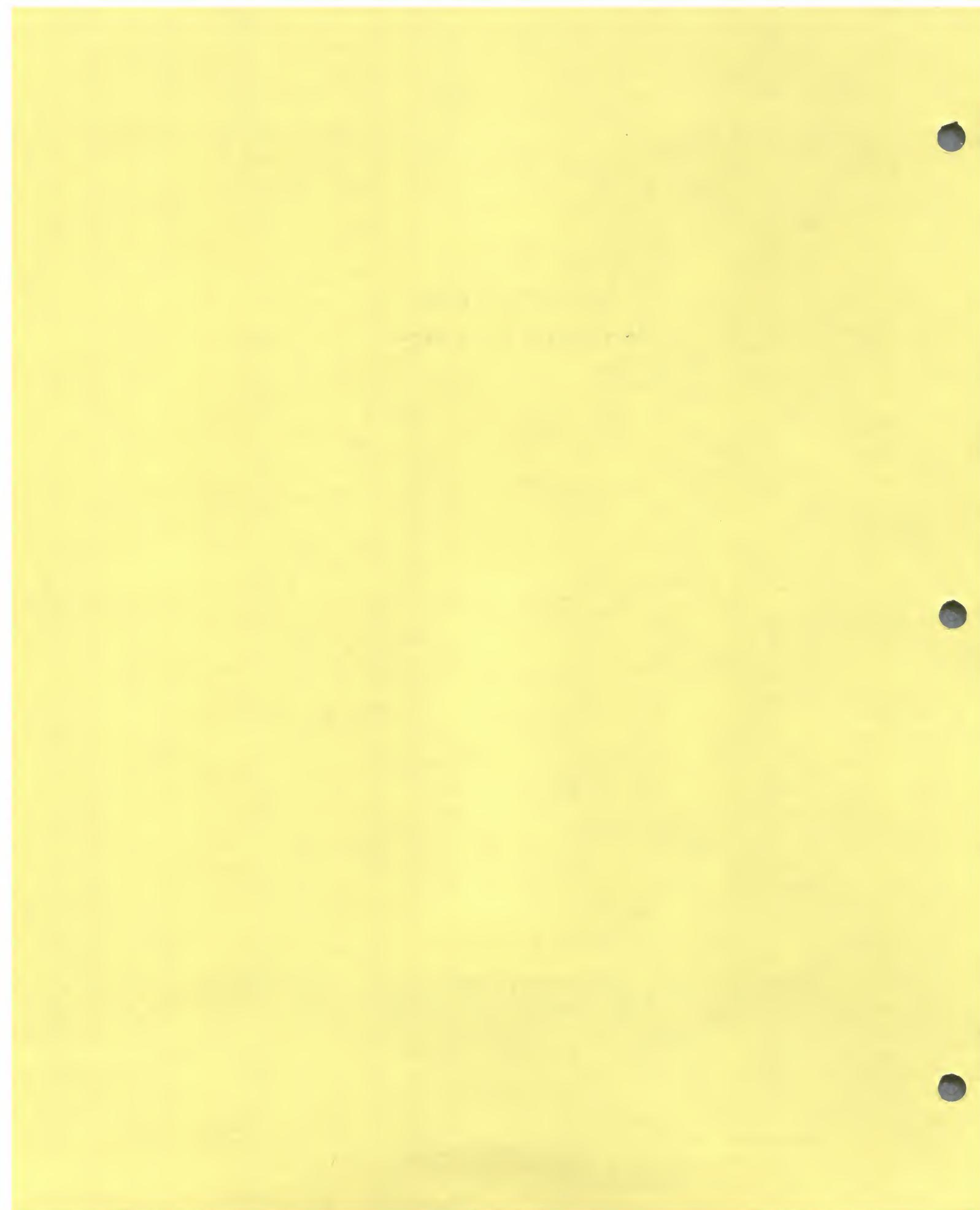
DATA MANAGEMENT

Too often people buy a computer with the idea that it will begin doing all of the data management and paper work for their home or business. Computers can be useful, and they can help people to keep track of financial records, personnel files, vacation schedules, and payroll information. However, the people who benefit from the computer's ability to manipulate data have an obligation to the computer to keep all of the data up to date.

In order to maintain current data files, someone must establish a work schedule which provides an orderly flow of paper and information to the computer operator. This schedule must be maintained with regular times for the input of new information and the correction of changed information. If a system to manage the work flow is in place, then the computer owner has a good chance of getting useful information from the computer on a timely basis.

Several commercially produced program packages are available to help with the computer filing of information. Some of them are more sophisticated than others. One might equate sophisticated with complicated in this context. Many times a person purchases a data base management system which is really too complex for the job to be done. Usually, the more features a program has, the more complicated it is to use. Of course, when the job to be done is complex, a complex program may be appropriate.

However, for most personal computer owners, learning to operate a complex program is not worth the effort. Many good programs lie idle in offices where they were purchased without examination and then found too sophisticated for the job. If the job requirements demand the ability to print several different reports from the same data base, if the reports come in several precise formats, and if the data must be sorted into several different arrangements, then a sophisticated data base manager is probably appropriate. On the other hand, if reporting requirements are light, and specialized formats are not especially important, an easier to use program with less features may well do the job.

The important point to remember is that <u>the program which doesn't get used isn't worth having.</u> The computer can do almost any data manipulation task that the people who perform the task manually or with calculators can do. Sometimes, though, the people have to retrain and adapt their way of working to the new program. The computer is not capable of performing any task without guidance and help from people.

A person who cannot do the job in the first place, or at least doesn't understand how the job is done, cannot tell some one else how to do it. Anyone who cannot explain a job to another person cannot explain it to a computer either. Computers can do a lot, but only with help from people.

WORD PROCESSING

As more and more information has become available for people to use, more sophisticated ways to handle the information have developed. The clay tablets of the Babylonians gave way to the papyrus of the Egyptians. Gutenberg revolutionized information distribution with his press. The inventor of the typewriter, Henry Mill, moved the printing press's abilities into the office and then the home. Mill received a patent from Queen Anne on January 7, 1714 and began to change people's habits and word processing procedures.

At first the scribes who had labored with pencil, quill and fountain pen resisted the technology. It was too complicated, too hard to learn. When electric typewriters arrived, people had difficulty adjusting to the carriage return key instead of the carriage return lever. Many still remember making the transition and reaching up for a lever which didn't exist.

The next step after the electric typewriter seems to be the small computer outfitted with word processing software and a printer. At first, it seems complicated and, indeed, there are different procedures to learn. After a few trials, most people pick up the procedures and object to going back to a typewriter.

One of the complications of learning word processing skills is the set of initials or memory devices which needs to be mastered to take full advantage of the program's features. Usually the abbreviations are similar to the words which they represent and they are easy to remember. At the start, there are many of them, but taking them in small groups a few at a time and then practicing with them, reduces the complication. Examples are "ce" for a centered title, "pa" for the start of a paragraph, "d" for delete, "i" for insert, and "id" for indent.

In addition to the initials, some of the keys on the small computer are different than the keys on the typewriter. These keys add features and functions to the word processor that the typewriter doesn't have. They also add to the task of learning to use a word processor. Examples of these keys include "ESC" or the escape key. With some of the word processing programs, the escape key is used for shifting for capital letters. The "CTRL" or control key has a function similar to the shift key on a typewriter. It adds extra features to some of the keys on the keyboard. By

holding down the control key and pressing "P" in one program, the operator can cause the program to move forward one whole page in the document.

Learning to use a word processor is much like learning any other new skill. It requires a desire to learn on the part of the student as well as a willingness to practice. Simply reading about it won't suffice. Once learned, though, it becomes a valuable, practical tool which will be used regularly. Preparing text becomes so much easier that some people actually write more than ever. The drudgery associated with re-typing drafts and reading smudged handwriting disappears. All that remains is the fun and satisfaction of producing a well-written, attractive document.

Using Apple Writer II

This is a first attempt at using the Apple Writer word processing program. After reading the first few pages of the manual and skimming the table of contents, you should boot your Apple Writer disk and start typing.

Most people have few requirements for special formatting of their text. This means that getting started with Apple Writer is relatively easy. There are some commands and keystrokes which need consideration, though.

Important Keystrokes

Control b will move the cursor to the beginning of your text file.

Control e will move the cursor to the end of the file.

Typing escape once will enable the upper case mode.

Typing escape twice in succession will enable cursor movement. You use the I, J, K, and M keys to move the cursor up, left, right and down. Pressing the space bar takes you out of the edit mode.

Other escape functions for cursor movement make use of the E, S, D, and X keys with the escape key. Type escape twice and use E to move up 12 lines of text. Use X to move down 12 lines; S to move left 24 characters or to the next space; and D to move right 24 characters or to the next space.

Saving Your Files on Disk

Typing control s will cause the program to ask you for a file name to use when putting your file on disk. You type in the file name you wish to use and press return. You will see the disk drive light come on momentarily and your file will be saved. It is a good idea to save your work every ten or fifteen minutes when you are using your word processor. This protects you against loss of data due to power failure or accident.

Printing Your Files

In order to invoke the print program, type control p. You will see the prompt, {p}RINT / PROGRAM : at the bottom of your screen. Type in NP. The file in memory will begin to print.

.LM10 – Set the left margin

.PM35 – Indent 35 spaces beyond left margin

March 7, 1983

.PM0 – Cancel indent

Hitting an 'extra' RETURN will give you blank lines.

RE: Homeowner Insurance

Spaces → Replacement Coverage Personal Property

Dear

.PM5

     Homeowner policies don't pay you enough to replace your personal property in your home. Personal possessions generally are insured against loss for their actual cash value at the time of loss. That means a $500.00 television set bought five years ago may be worth only $200.00 at the time of the loss. **Carriage RETURN only at end of paragraph.**

.PM5

     Cumberland Mutual Homeowner's Replacement Cost would replace yourtelevision with an amount equal to the cost of a new set at today's prices.

.PM5

     Cumberland's Homeowner contents replacement coverage applies whether you lose afew contents through theft, all of them through fire or for any other reason your personal property is insured for.

.PM5

     If you would desire a quote on this coverage, please mark the appropriate box and return this letter to me.

.LM15

Quote on replacement cost

Quote on additional dwelling coverage

Quote on increased limits on jewelry

.PM35   Very truly yours,

Hometown Assurance, Inc.

.ce <RETURN> for each line to be centered

510 School House Lane
Tuckahoe, N.J. 08250

.id35<RETURN> for each indentation for date and closing

July 8, 1982

Computer Journal
16 Ram Road
Boston, MA 76901

<RETURN> for each blank line

Dear Editor,

.pa<RETURN> for each new paragraph

    Your last issue of the Computer Journal created a lot
of interest at our office. You seemed to include an article
for each one of our employees, and everyone enjoyed reading
your magazine. However, we have some suggestions for future
issues.

    While your authors seem to try and cover all of the
major small computer manufacturers, they usually fall short
with reports on the Commander. We have counted some of the
articles and calculated the length of some of the reviews.
The Commander Computer articles average only 800 to 900
words, while all of the others average about 1800 to 2000
words. Also, you have one or two Commander articles in each
issue, but five or six on each of the other computers.

    We hope you will be able to provide more coverage to
our favorite, the Commander, in your magazine. Maybe you
need a writer interested in the Commander. If so, we could
suggest someone from our staff. We have three:

.lm 30<RETURN> for a list with a new left margin

    1) Joe Burnes, Analyst
    2) Tanya Turnbull, Senior Programmer
    3) Bill Silver, Consultant

.lm 10<RETURN> to reset left margin

    Each of these people has extensive experience with the
Commander and the software available for it. If you wish to
contact any of them, I know they are willing to help you
increase your coverage of this fine machine.

                  Sincerely,

                  Alvin Pearson, President
                  Commander Computer

AP/ae
c: file

ESC for a CAPITAL LETTER
ESC twice for all CAPITALS
ESC again to cancel all CAPITALS

510 School House Lane
Tuckahoe, N.J. 08250

July 8, 1982

Computer Journal
16 Ram Road
Boston, MA 76901

Dear Editor,

    Your last issue of the Computer Journal created a lot
of interest at our office. You seemed to include an article
for each one of our employees, and everyone enjoyed reading
your magazine. However, we have some suggestions for future
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major small computer manufacturers, they usually fall short
with reports on the Commander. We have counted some of the
articles and calculated the length of some of the reviews.
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words, while all of the others average about 1800 to 2000
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our favorite, the Commander, in your magazine. Maybe you
need a writer interested in the Commander. If so, we could
suggest someone from our staff. We have three:

                1) Joe Burnes, Analyst
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                        Alvin Pearson, President
                        Commander Computer

AP/ae
c: file

GRAPHICS

Apple modes

     The Apple has two separate graphics modes which you can
use to illustrate your programs. They are called the Lo-res
mode   and   the   Hi-res   mode for   Low   Resolution   and   High
Resolution.   These terms refer to the density of the screen
while in the graphics mode.

     During Lo-res graphics the screen is divided into a 40
X 40 grid so that there are 1600 blocks available for
drawing.   In Hi-res the screen set up as a grid with 280
dots across and 160 dots down. With Hi-res you have a total
of 44,800 dots for drawing which allows you to have much
more detail in your pictures.

Applesoft Colors

     Both modes allow you to have color and animation.   In
Lo-res you have 16 colors and in Hi-res, you have 8.   All
colors are identified by numbers in Applesoft so that the
program can produce the color you want on the screen.

Here are the Lo-res color codes:

```
          0  BLACK          8  BROWN
          1  MAGENTA        9  ORANGE
          2  DARK BLUE     10  GREY
          3  PURPLE        11  PINK
          4  DARK GREEN    12  GREEN
          5  GREY          13  YELLOW
          6  MEDIUM BLUE   14  AQUA
          7  LIGHT BLUE    15  WHITE
```

     The shades of these colors vary from monitor to monitor
and TV to TV.   There is an adjustment for color trim inside
the Apple which helps a little, but the best solution is to
use the Color Demosoft program on the System Master disk to
set your monitor or TV as close as you can get it.

Using Lo-res Graphics

     During this introductory course   we will practice
drawing pictures with the Lo-res mode. There is a great deal
of similarity between the commands of the two modes and
transferring from one to the other is fairly easy.   The
Computer Adventures disk contains a Graphics Tutorial which
demonstrates and explains the Lo-res commands.   It also
includes an assignment in Lo-res computer art.

     Very few commands are required to accomplish a drawing.
A glossary of the Lo-res commands follows:

COLOR= - This BASIC command resets the color of the screen for you. Colors are identified by number. Here is a sample line:

110 COLOR = 9

This line would set the color to ORANGE according to the chart. Your TV may need some adjustment to get it to match the chart. Note the = symbol; it is part of the command.

==================

GR - This command places the screen in the Lo-res graphics mode so that the invisible 40 X 40 grid is placed on the screen. However, one caution is needed. GR also sets the color to 0, black. With the color set to 0, you will not be able to see any of the lines you might draw. You will have to reset the color to one you can see each time you use GR as a command. Sample:

100 GR

==================

HLIN - If you wish to draw horizontal lines on the Lo-res screen, use HLIN. This command draws a horizontal line from point A to point B along the X-axis. Here is a sample line:

130 HLIN 20,38 AT 10

Note the comma and the AT in line 130. This instruction would draw a line across the screen from point 20 to point 38 on the tenth row from the top of the screen.

==================

PLOT - When you want to draw just one point, rather than a line, you use the PLOT command. Here is the syntax:

140 PLOT 19,19

This instruction would put one dot approximately in the middle of the screen.

==================

VLIN - This BASIC command uses the same format as the HLIN command, but it draws a vertical line from the top of the screen to the bottom. Here is a sample instruction:

150 VLIN 10,38 AT 7

Note that the syntax is identical to that of HLIN.

==================

COMP. LANGUAGES IN SCHOOL
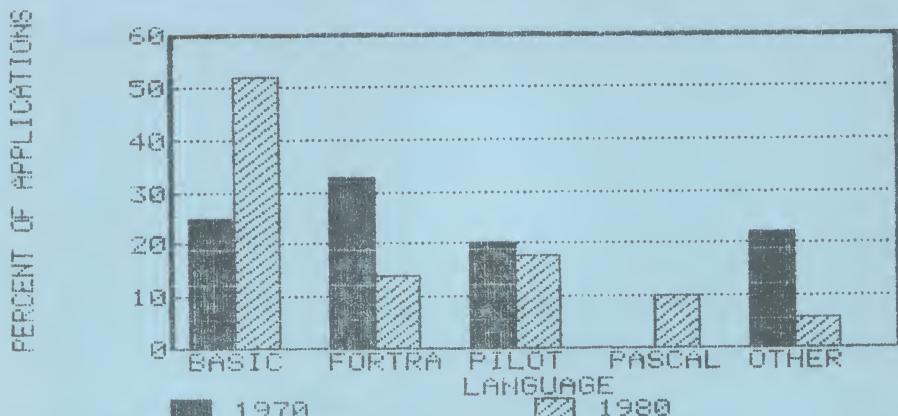
PFS Graph

COMP. LANGUAGES IN SCHOOL
1970 PERCENT OF USAGE

□ 0%
PASCAL
▨ 20%
PILOT
▤ 22%
OTHER
▥ 25%
BASIC
▧ 33%
FORTRAN
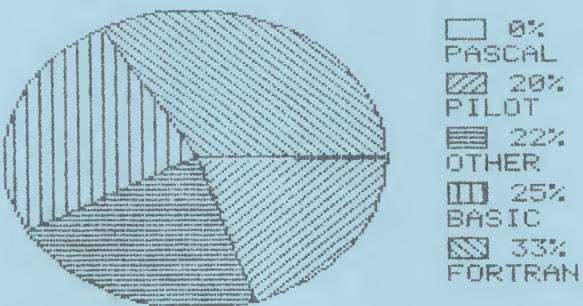
High Resolution Graphics Examples

COMP. LANGUAGES IN SCHOOL
1980 PERCENT OF USAGE

□ 6%
OTHER
▨ 10%
PASCAL
▤ 14%
FORTRAN
▥ 18%
PILOT
▧ 52%
BASIC
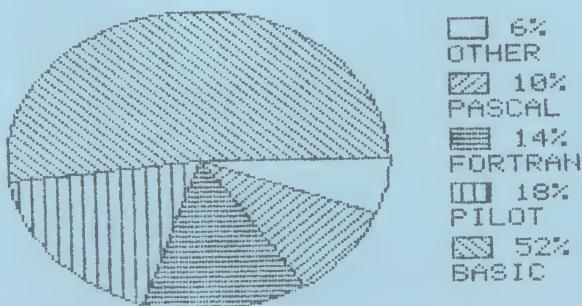
High Resolution Graphics Examples
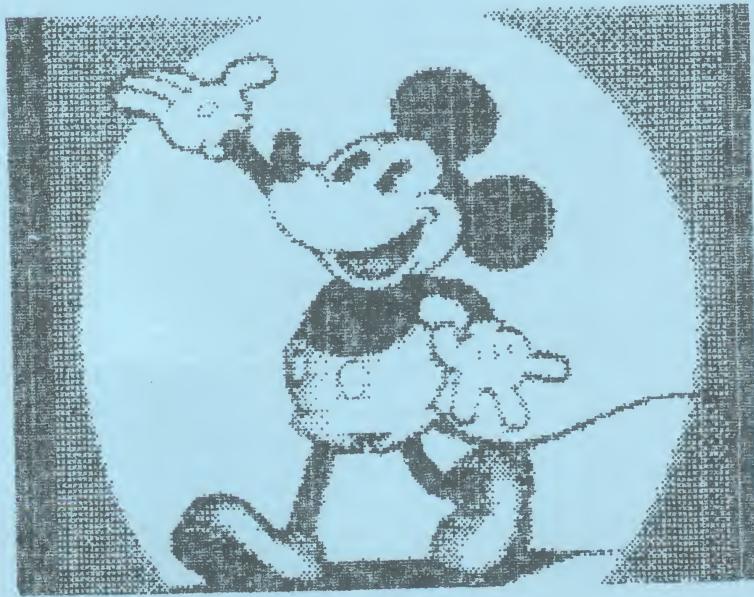
Drawn on an Apple][Plus computer and printed
with an Epson MX-80. The hi-res screen has 280
plotting points across and 160 down.

RECREATION

The personal computer has the ability to complete
many of the everyday tasks required in most homes and
small businesses. It can compile and maintain lists of
data, do any and all financial calculations, and provide
information to assist in decision making. It can also
entertain for hours without interruption.

Most of the arcade games which people play on the
boardwalk and in malls and other recreation centers come
in a personal computer format. The popular video games
like the Atari and Intellivision bring the arcade game
into the home, too, but the personal computer has the
ability to mimic more closely the real arcade machines.
All of the color, sound, speed and strategy of the full
sized machine are included. Part of the appeal of these
games, where it seems the aliens always win eventually, is
the interaction which occurs between the game and the
player.

Other formats for games not found in the arcade are
offered on the personal computer. These provide even more
interaction, and they also let the player win once in a
while. The adventure game has a long history of
popularity among computer game players. During the 1960's
there were rumors outside of the computer world that many
hundreds of man hours and much computer time were being
used to play games on the Department of Defense computers
and on the computers of large corporations such as General
Motors and Dupont. The game the computer scientists were
playing was the adventure game. The basic plot of an
adventure game involves a lost or hidden treasure which
must be rescued from a maze of rooms with secret passages
and dangers to be avoided. The player types in short
directions to the computer such as GO NORTH, OPEN DOOR,
TAKE GOLD, or STAB SALLY. The computer responds in any
one of many ways and either follows the instruction or
states some reason why it cannot. Perhaps the DOOR IS
LOCKED, or SALLY HAS A GUN. SHE SHOT YOU. YOU ARE DEAD. DO
YOU WANT TO PLAY AGAIN? will be the computer's reaction to
the command.

Mapping the maze and surviving the obstacles to
retrieve the treasure have almost become obsessions with
some people. The original adventure games required
tremendous amounts of computer memory in order to have
responses ready for almost any action by the player.
Also, the big computers being used to play them did not
have much graphics, so the games were strictly text

adventures. The personal computers have the memory needed to play the game and they have graphics as well. The adventurer at home can see the treasure and watch as Sally attacks. The addition of pictures to the games has greatly increased their popularity and several companies now have adventure games as their major product line. One game which recently appeared on the market is called "Deadline" and it involves a complicated murder mystery which Hercule Poirot and Lt. Columbo together would have difficulty solving. The feature of the game which is a bit different is that it also includes a package of sealed clues which are to be opened only at specified times as the game procedes on the computer. These clues help the player to reach conclusions about the guilt or innocence of various members of the cast.

A modification of the adventure game format which some people enjoy is the series called interactive fiction. In these stories, the player becomes a major character in the plot. The computer addresses the character by name and expects decisions which influence the outcome of the story. One example, His Majesty's Ship Impetuous, places the player in the role of ship's captain and then forces the captain to make life and death decisions about the members of the crew. The captain's own future and career seem to ride on each decision. The story can capture a player's attention completely and sometimes become so realistic that the player really agonizes over the fate of the crew member.

More traditional games found in the personal computer marketplace include the popular board games such as chess, checkers, go, monopoly, and cribbage. Games of chance like blackjack, poker, and roulette are available, too. Animated graphics of the roulette wheel and the tumblers on a slot machine are part of a casino series offered by one company. Contract bridge players can find talented opponents on the personal computer. The computer can provide practice and tutorial lessons for players who wish to improve skills in games of strategy such as chess and bridge.

Some of the recreational programs available will provide entertainment for people who don't have access to the computer. For example, one firm markets a program called "Crossword Magic" which actually constructs and numbers a crossword puzzle complete with clues and an answer key. The person using the program enters a list of words for the puzzle and watches while the computer provides the crosses on the screen. Occasionally, the computer changes its mind about the appearance of the

puzzle and reconstructs it with the words all going in some other place on the page. Once the puzzle is completed, the program then asks for the clues for each word. The program has the facility to allow someone else to complete the puzzle on the screen or it will print the entire puzzle with clues and the answer key on separate sheets of paper so that someone can do the puzzle traditionally with a pencil.

The recreational uses of the personal computer have just begun to be exploited. In addition to games of chance and strategy, the personal computer can provide a creative outlet. Computerized music, which rivals commercial productions, can be composed and played through a home stereo. Original graphic art is being produced on the screen and printed on paper with programs costing less than fifty dollars that competes in beauty and clarity with works being produced in universities and commercial studios on computers that cost over one hundred thousand dollars. This seems to be one area where the applications of the personal computer really are limited only by the imagination of the user.

COMPUTER LABORATORY
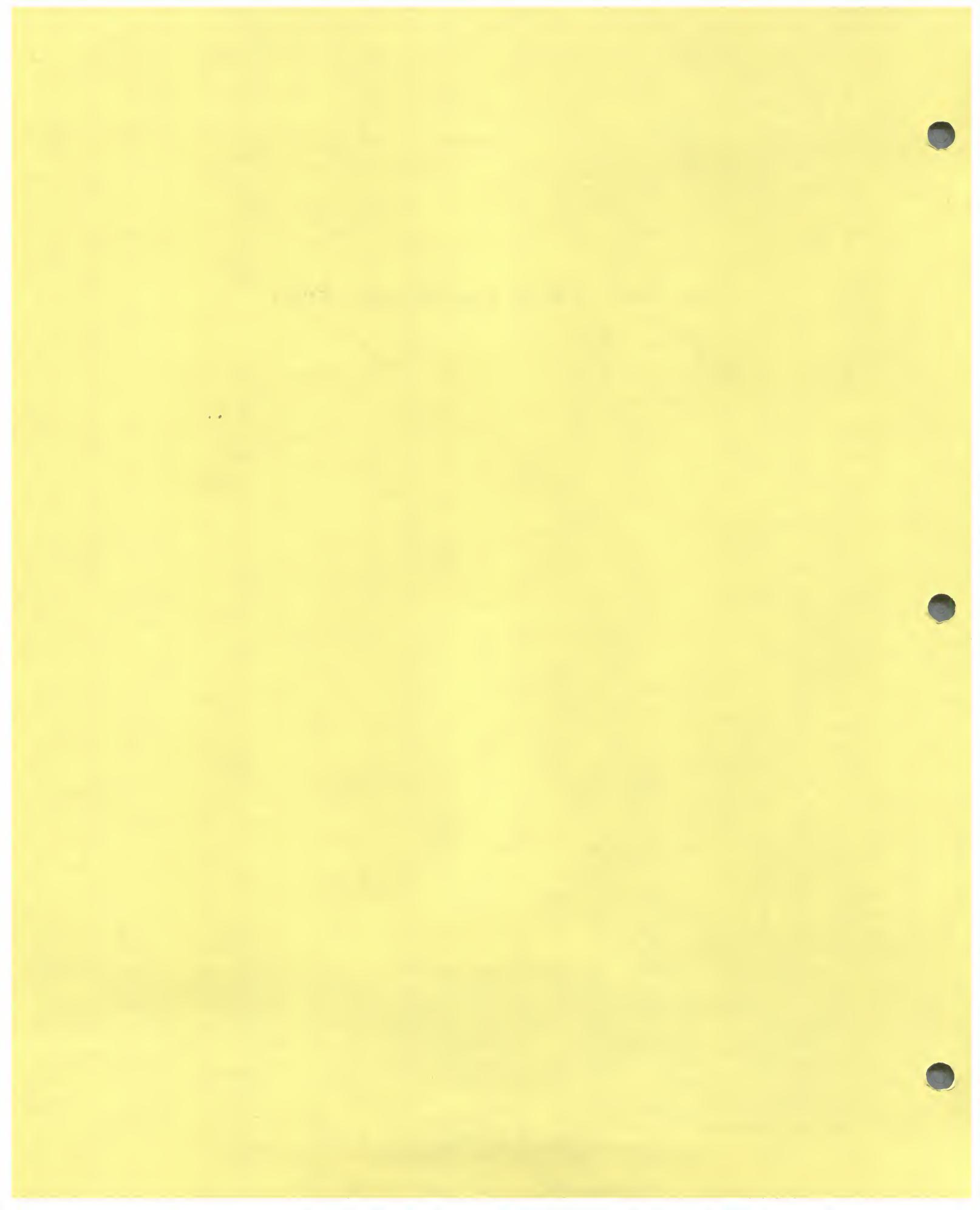
Steps in Programming

1. Determine what you want for output. That is, decide what you
    expect to see on the screen or paper if you have a printer.
    Write down the output.

2. Figure out which commands you must use to produce your
    output. Establish an order or sequence for the program.
    What will it do first, second, third?

3. Write the program out on paper using line numbers, commands
    and whatever data you need. This written program is what
    you'll use for your guide when you enter the program into
    your computer's memory.

4. Review all the steps in your program to make sure the output
    will resemble your expectations.

5. Enter your program into the computer and RUN it. If it
    works, congratulations. If it doesn't, you will probably
    get a message which will help you to correct the problems.

A reminder:

        Most computer operators are not programmers. You
    should plan your programs so that your screens have an easy
    to follow, uncluttered format. Include instructions for the
    operator within your program whenever you can.

Program Planning

Programmer................

A. Purpose of the program:

B. Expected output:

MENU DRIVEN DESIGN

Most of the people who use computers want to complete some specific job in an efficient manner. They expect the computer to make the job easier in some way. This expectation means that the computer user does not want to have to learn some new skills involving programming and technical equipment.

Progammers need to consider the expectations and desires of the computer users when designing programs. One highly efficient technique which many of the more popular personal computer programs use is the menu. Menus in restaurants help diners to select a meal. Menus in computer programs help users to select a function.

The programs written for Computer Adventures and the programs used as demonstrations during Computer Adventures employ this menu technique. When the Computer Adventures disk is first booted, it presents a title screen with the prompt, PRESS RETURN. Once the instruction has been completed, the first menu appears giving a choice of 1) Lessons, 2) Demonstrations, or 3) Quit.

Choosing either of the first two leads to another menu. One gives several choices for lessons; the other, several choices for demonstrations. By using several short menus, each of which needs only a one key response, the program simplifies the task of the program user. Choices are narrowed each time so that each decision is clear cut.

An additional feature of menu driven design is that it allows the computer user to select none of the possible choices, but instead directs the program back to the previous menu. Simply providing a QUIT, a RETURN TO PREVIOUS MENU, or some other exit prompt, the programmer guides the user either forward or back in the program.

Menu driven design helps those who don't type well, too, because of the small number of keys which must be selected to reach the preferred section of the program. This design technique also helps those people who don't read instruction manuals before they try to use a product. Clear instruction manuals which are partially defined by the limited choices on the menu screens are also important, of course. But, the instructions can often be included as part of the menu screen, too.

Anyone considering the purchase of a computer program, or the production of a program for others to use, should study the possibilities for menus within the program. Menus are not the sole criteria for judging a program's value; however, they certainly enhance the usefulness of a program if they help the person using the program to get the job done.

SAMPLE MENU FROM
COMPUTER ADVENTURES

Choose one:
1) Lessons
2) Demonstrations
3) Quit
→

Once a program is planned and written out, it must be put into the computer's memory so that it can be stored on a disk or tape and used. Programs written in BASIC have line numbers which tell the computer the sequence the programmer expects it to use when running the program. However, the lines do not have to be entered in sequential order. If the programmer decides to include a line 120 after typing in lines 100 to 300, the computer will accept the line and insert it in its proper place in the program.

The very first step whenever entering a program into memory is to clear the memory of any program which may already be there. The easiest way to do this is to type NEW and then press the RETURN key. This command tells the computer that the programmer intends to enter a new program. The computer responds by erasing whatever program was stored in memory and putting the blinking cursor on the screen. If the programmer wished to check to be certain the memory was indeed blank, typing LIST and pressing RETURN should show a blank screen. If a program were there, the LIST command would display the program.

Here is a program line:

110 PRINT"GOOD MORNING."

In order to get this line into memory, simply type it in exactly as it should be stored. Type 110 PRINT"GOOD MORNING." and press RETURN. The line will be in the memory. At this point, if the programmer were to type LIST and press RETURN, the line number and the the commands would appear on the screen. If, instead, the programmer typed RUN and pressed RETURN, the words, GOOD MORNING. would be on the screen without the number, the command, or the quotes.

LIST shows the program itself with line numbers and commands. RUN actually causes the program to execute producing the program's intended output on the screen, but not showing any of the commands or numbers which put the output there.

Additional lines in a program would be entered in exactly this manner. If a line happens to be so long that it needs more than one line on the screen, just keep typing. Don't worry if a word is broken on the screen, it will be stored properly in memory. Hitting the RETURN key signals the computer that the line is complete. If the programmer hit RETURN each time the line reached the right margin of the screen, much of the program would not be stored properly.

The computer recognizes the beginning of a line by the number and the end of a line by the RETURN key. As long as the programmer consistently follows this procedure, the program will be entered properly. If, in addition, the program is syntactically and logically correct, it will execute when RUN.

GRANDMA'S

Computer Laboratory

Title: <u>Test Averages</u>   Name: _____

Date: _____

Type in lines 100 to 230 <u>exactly</u> as they appear here.
Don't forget to use NEW before you begin. <u>NEW will
remove any program which may be in memory.</u> When you
have entered the whole program, type RUN. Good luck.

```
10   REM  * * This program contains all the
20   REM  * * Components of any computer program:
30   REM  * *   1) Operator instructions
40   REM  * *   2) Input routines
50   REM  * *   3) Calculations
60   REM  * *   4) Output of results
100   HOME
110   PRINT "THIS PROGRAM FINDS TEST AVERAGES"
120   PRINT : PRINT "FOR UP TO 100 STUDENTS."
130   PRINT : PRINT "ENTER 999 TO QUIT."
140   FOR TEST = 1 TO 100
150   PRINT : PRINT "ENTER TEST SCORE # ";TEST;: INPUT " ";SC
160   IF SC = 999 THEN TEST = 100: GOTO 180
165   REM  * *   TTL IS TOTAL, SC IS SCORE
170   TTL = TTL + SC:NUMBER = TEST
180   NEXT TEST
185   REM  * * DO CALCULATIONS
190   AVG = TTL / NUMBER
200   HOME
210   PRINT : PRINT "YOU ENTERED "NUMBER" SCORES."
215   PRINT
220   PRINT "THE AVERAGE SCORE WAS ";AVG
230   END
```

Commands Used

REM	FOR...TO...NEXT
HOME	INPUT
PRINT	END
IF ... THEN	+ [plus]

Title: <u>Gas Mileage</u>   Name:_____

                                  Date:_____

Type in this program exactly as it appears here, starting
with line 100. The beginning lines, prefaced with REM, are
reminders for the programmer. Whenever you start to enter a
new program, you should type in the command NEW. NEW will
remove any program which might be sitting in memory so that
only your program is there. Without this precaution, you
may find that another program and yours have been
intermingled and you probably will have a real job to
untangle the two and get yours working. Usually, you will
have to re-type the program if you have this problem.

    When you have entered the whole program, type RUN.
Good luck.


```
10   REM  * * THIS PROGRAM CONTAINS ALL THE
20   REM  * * COMPONENTS OF ANY COMPUTER PROGRAM:
30   REM  * *   1) OPERATOR INSTRUCTIONS
40   REM  * *   2) INPUT ROUTINES
50   REM  * *   3) CALCULATIONS
60   REM  * *   4) OUTPUT OF RESULTS
100   HOME
110   PRINT : PRINT "THIS PROGRAM FINDS AVERAGE"
120   PRINT : PRINT "MILES PER GALLON FOR ANY GIVEN TRIP."
130   PRINT : PRINT "PLEASE ENTER MILEAGE AT START OF TRIP"
140   PRINT : INPUT START
150   PRINT : PRINT "PLEASE ENTER MILEAGE AT END OF TRIP"
160   PRINT : INPUT QUIT
170 TRIP = QUIT - START
180   PRINT : PRINT "PLEASE ENTER GALLONS OF GAS USED"
190   PRINT : INPUT GAS
200 MPG = TRIP / GAS
210   PRINT : PRINT "YOU TRAVELLED "TRIP" MILES AND"
220   PRINT : PRINT "YOU AVERAGED "MPG" MILES PER GALLON."
230   PRINT : INPUT "WOULD YOU LIKE TO DO ANOTHER TRIP? (Y OR N)";R$
240   IF R$ = "Y" THEN  GOTO 130
250   PRINT : PRINT "THANK YOU USING THIS PROGRAM. GOOD BYE."
```


Commands Used

REM   FOR..TO..NEXT
HOME   INPUT
PRINT   IF..THEN
END   = (EQUALS)
/ (DIVIDE)   - (MINUS)

Title **Sleep Time**

Name _____

Date _____

      Here is a program which asks for information, does some calculations and returns new information to the operator. Examine the commands and calculations. Enter the program and RUN it. Watch the results and compare the output with what you see on the screen. Don't forget to use NEW.

```
100   HOME
110   PRINT : PRINT "HOW MANY HOURS DO YOU USUALLY SLEEP EACH NIGHT?"
120   PRINT : INPUT HOURS
130 WEEKS = 7 * HOURS
140 MNTH = 30 * HOURS
150 YEAR = 365 * HOURS
160 DAYS = YEAR / 24
170   PRINT : PRINT "IN ONE WEEK YOU WILL SLEEP "WEEK" HOURS."
180   PRINT : PRINT "IN ONE MONTH YOU WILL SLEEP "MNTH" HOURS."
190   PRINT : PRINT "IN ONE YEAR YOU WILL SLEEP "DAYS" DAYS."
200   PRINT : PRINT "JUST THINK WHAT YOU COULD DO WITH ALL": PRINT
      : PRINT "THAT  TIME."
```

Assignment:

      You have just started your new job at the local doughnut store. You have to keep track of sales and give totals to the manager each day.

      Write a program which accepts input for total doughnut sales by category. Jelly doughnuts cost 25 cents; chocolate, 40 cents; and plain cost 20 cents. Your program should ask for the number of each kind; then it should calculate and print the total number of doughnuts sold and the total money collected.

      Use the program you just entered as a model.

Commands Used

HOME	***** (multiply)
PRINT	/ (divide)
INPUT	= (equals)

PROGRAM RUN

1   THIS PROGRAM FINDS TEST AVERAGES

FOR UP TO 100 STUDENTS.

ENTER 999 TO QUIT.

ENTER TEST SCORE # 1 98

ENTER TEST SCORE # 2 87

ENTER TEST SCORE # 3 79

ENTER TEST SCORE # 4 90

ENTER TEST SCORE # 5 68

ENTER TEST SCORE # 6 999

YOU ENTERED 5 SCORES.

THE AVERAGE SCORE WAS 84.4

2   THIS PROGRAM FINDS AVERAGE

MILES PER GALLON FOR ANY GIVEN TRIP.

PLEASE ENTER MILEAGE AT START OF TRIP

?67900

PLEASE ENTER MILEAGE AT END OF TRIP

?68100

PLEASE ENTER GALLONS OF GAS USED

?10

YOU TRAVELLED 200 MILES AND

YOU AVERAGED 20 MILES PER GALLON.

3   HOW MANY HOURS DO YOU USUALLY SLEEP EACH NIGHT?

?9

IN ONE WEEK YOU WILL SLEEP 63 HOURS.

IN ONE MONTH YOU WILL SLEEP 270 HOURS.

IN ONE YEAR YOU WILL SLEEP 136.875 DAYS.

JUST THINK WHAT YOU COULD DO WITH ALL

THAT TIME.

SOFTWARE SUGGESTIONS

SOURCES OF SOFTWARE REVIEWS

Choosing programs for your computer is not an easy task. Many programs exist to do similar jobs. For example, this page was prepared for you using Screen Writer II from On-Line Systems in Coarsegold, California. At least fifteen word processing packages are available for the Apple II Plus and the Apple IIe. How can you decide which one to purchase?

One way to decide is to find someone who already owns and uses a program and ask for an opinion. Another way is to visit a computer store, such as one of Jonathan's Computer Centers, and get a demonstration. A third way to explore the available programs is to read reviews in the computer journals.

Here is a list of the most popular of the journals:

COMPUTE! Magazine
P.O. Box 5406
Greensboro, NC 27403
12 issues for $20.00

CREATIVE COMPUTING
P.O. Box 789-M
Morristown, NJ 07960
12 issues for $20.00

InfoWorld
Circulation Department
375 Cochituate Road
Box 837
Framingham, MA 01701-9987
52 issues for $25.00

Journal of Courseware Review
P.O. Box 28426
San Jose, CA 95159
$6.95 per issue

Peelings II
P.O. Box 188
Las Cruces, NM 88004
9 issues for $21.00

Softdisk Magazette   (A magazine on disk)
3811 St. Vincent
Shreveport, LA 71108
First month, $10.00; succeeding months,
$5.00 when you return the disk.
They pay the postage.

Softalk
Circulation Dept.
11021 Magnolia Blvd.
North Hollywood, CA 91601
Best deal in town. Free to Apple
owners who mail in their serial
numbers.

Some Software Recommendations

Throughout the Computer Adventures course, we introduce
you to some of the commercially available software we
believe worthwhile and easy to use. Of course, we also
provide you with some programs we have written ourselves to
help you learn to use the Apple.

Some programs seem especially good for people just
starting to use a computer. Our criteria for selection
include ease of use, practical application and reasonable
cost. A list of programs we recommend to help you start
using your computer right away follows:

The PFS Series
Includes PFS Filing System, PFS Report and
PFS Graph. These programs work independently
or as a package. They provide easy to use data
base management.
The Filing System, $125.00
The Report System, $125.00
The PFS Graph, $125.00
Published by the Software Publishing Corp.

Screen Writer II
This is a very versatile word processing
package. It works with many different printers
and has special features such as creating
up to four indexes for one document.
Published by Sierra On-Line Systems, $129.95

Crossword Magic
Because this program can create such personal
output in the form of crossword puzzles, many
people have so much fun using it that they
forget they are just learning to operate
a computer. All of the commands are clear and
presented in a concise menu.
Published by L & S Computerware, $49.95

Master Type
For people just learning to type so that they
can use a microcomputer, this game adds fun
to a dreary task.
Published by Lightning Software, $39.95

Zoom Grafix
If you want to print out your High Resolution
pictures this is the program to have.
It offers many options to take full advantage
of whatever your printer can do.
Published by Phoenix Software, $49.95

Castle Wolfenstein
This game is different than most of the others.
It has room for a lot of strategy on the part of
the players; the action is fast, and the computer
actually talks to the player. This program does a
good job of demonstrating some of the Apple's
abilities.
Published by Muse, $29.95

Other programs

All of the programs listed above are useful, but they
do not represent the full range of programs available.
Starting with programs that are very easy to use will help
you get accustomed to your computer with little difficulty.
Once you have become comfortable with it. you will want to
move on to others.

Probably the most popular of the business programs
available for the Apple is VISICALC. This program allows the
operator to enter formulas and calculations for any
conceivable financial problem. If the question can be
answered with a pencil, paper and calculator, then VISICALC
can do it, too. More than likely, VISICALC will complete
the task more quickly and with less chance for error.

However, learning to use VISICALC requires several
hours of practice and study. It is not a wise choice as a
first program; you should be familiar with your Apple before
you try to use it. Once you've used it, you will probably
always use it. VISICALC retails for $250.

Another area to move into once you have become
comfortable with the Apple is electronic mail. Hooking your
computer to the telephone and communicating with other
computers is not really difficult. All that is required is
a peripheral called a modem, some software, a printer and a
telephone.

A great deal of new software is being introduced
regularly. If the application you need isn't available
today, it probably soon will be.

APPENDIX

PROGRAMMER'S WORKSHEET

REMEMBER:

1. Give clear messages on the screen so that the operator knows what you expect.

2. Use REM's throughout your program so you will have notes when you return to it to make changes.

3. Loops and subroutines will save you time, work and memory.

4. Plan before you start. Know what outcomes you expect, what formulas you need, and what variables you will use. Write at least a rough outline of what the program will do.

5. ? = PRINT

6. Your text screen has 24 lines from top to bottom. VTAB 1 is the top line; VTAB 24, the bottom. You have forty columns across. HTAB 1 is the first; HTAB 40, the one on the far right.

7. ESC, the Escape key, is used to put the computer into EDIT mode so that you can move the cursor around and change program lines.

```
10   REM   Program Title
20   REM   Date
100
110
120
130
140
150
160
170
180
190
200
210
220
230
240
250
260
270
280
290
```

PROGRAMMER'S WORKSHEET

10 REM Program Title

20 REM Date

100

110

120

130

140

150

160

170

180

190

200

210

220

230

240

250

260

270

280

290

INVENTORY

USE THIS SHEET TO COMPILE INFORMATION ON THE MATERIALS YOU
INTEND TO RECORD ON YOUR COMPUTERIZED INVENTORY.   COMPLETE EACH ITEM
AS APPROPRIATE.   YOU WILL USE THIS SHEET TO ENTER INFORMATION
WITH THE PFS FILING SYSTEM.

ROOM: LIVING ROOM

ITEM : COFFEE TABLE   YEAR ACQUIRED: 1970

PRICE: 800   CURRENT VALUE: 400

SERIAL NO. : —
DESCRIPTION: Green marble top, hand carved teak

Living room
ITEM : ORIENTAL SCREEN   YEAR ACQUIRED: 1971

PRICE: 1000   CURRENT VALUE: 1800

SERIAL NO. : —
DESCRIPTION: Hand carved jade inlay, four seasons

DINING ROOM
ITEM : CHINA SERVICE   YEAR ACQUIRED: 1981

PRICE: 1200   CURRENT VALUE: 1400

SERIAL NO. :
DESCRIPTION: NORITAKE BONE, GOLD EDGING, PEKING PATTERN,
       18 place settings

DINING ROOM
ITEM : ROUND TABLE   YEAR ACQUIRED: 1982

PRICE: 900   CURRENT VALUE: 750

SERIAL NO. :
DESCRIPTION: CENTURY FURNITURE CO.   WALNUT and TEAK

GARAGE
ITEM : BICYCLE   YEAR ACQUIRED: 1979

PRICE: 175   CURRENT VALUE: 50

SERIAL NO. : 1426ASR
DESCRIPTION: SCHWINN RACER

60 GARAGE
ITEM : TABLE SAW   YEAR ACQUIRED: 1978

PRICE: 495   CURRENT VALUE: 150

SERIAL NO. : BD 36821W
DESCRIPTION: Black and Decker, 1/2 horse, 7 1/4 " blade

    Family room
ITEM : Apple Computer   YEAR ACQUIRED: 1983

PRICE: 1995   CURRENT VALUE: 1995

SERIAL NO. : A2S2 - 101968
DESCRIPTION: 64 K, 1 DISK DRIVE, GREEN MONITOR

      Family room
ITEM : T V   YEAR ACQUIRED: 1980

PRICE: 600   CURRENT VALUE: 400

SERIAL NO. : R 26918 WC
DESCRIPTION: RCA, 23", Remote control, color

      LIV ROOM
ITEM : CHESS SET   YEAR ACQUIRED: 1968

PRICE: 100   CURRENT VALUE: 150

SERIAL NO. : —
DESCRIPTION: Ivory and jade pieces; King is 3 1/2" tall

      DINING ROOM
ITEM : Oriental rug   YEAR ACQUIRED: 1958

PRICE: 600   CURRENT VALUE: 1200

SERIAL NO. :
DESCRIPTION: Hand woven, made in Thailand, bamboo
        border, royal purple with tans and green pastels

COMPUTER CROSSWORDS

Crossword puzzles have always been popular word games. Constructing crosswords looks simple, but it can prove quite challenging. Crossword Magic, a program from L & S Computerware, does a lot of the work for you, but still requires planning to produce a really successful puzzle.

Puzzles often have themes which tie most of the words together. This theme adds interest and occasionally helps the person solving the puzzle to strengthen his understanding of some related words. Also, while building a word list for a puzzle base, it is a good idea to include words with letters in common to create opportunities for the words to cross.

Clues should be clear and short when possible. However, they should not be too easy or obvious. One feature of Crossword Magic is that it allows very personal puzzles which can be used as an extra-special gift or award for birthdays and other occasions. Another good use for Crossword Magic is to provide puzzles based on a lesson taught in any class, English, Social Studies, Math or Shop.

Use the next page to construct a list of words and clues. Then we will use Crossword Magic to complete your puzzle. Your completed puzzle can be printed on paper or displayed on the computer's monitor. Either way, someone will have fun solving it. You need about 25 to 30 words and clues.

COMPUTER CROSSWORDS

Planning Sheet

...........Word.............................Clue..............

The "floppy" disk units are used for permanent program and data storage. Data is written to and read from 5 1/4" "minifloppy" diskettes - magnetically coated plastic disks encased in square black plastic covers. Unlike the Apple's RAM memory, data stored on diskettes is preserved when power is turned off. But the disks are fragile; their care will be discussed later in this section.

THE CONCEPT OF STORAGE

Diskettes are used for data and program "storage". The storage process consists of copying a portion of Apple's memory onto the disk using a magnetic technique simular to that used in cassette recorders. Note the word "copy". When storing data or a program to a disk, that data must first exist in the Apple memory. Then, byte by byte, the information is reproduced on the disk. The data in memory remains in memory - a duplicate of the data resides on disk.

Data or program retrieval from disk, known as "loading", is also a copying process. When loading data into the Apple, the information is copied, byte by byte, from the disk into the Apple's memory. The data remains on the disk - a working copy is created in memory. Thus, if a program is loaded then edited by the user, the changed program must be saved to disk if the changes are to be permenant.

Programs which make use of disk storage for their data files generally do so with no need for user help. Data files are created, updated or deleted automatically.

Users who need to modify programs, copy files from one disk to another (for backup) or to run some of the more primitive software must be aware of the disk operating system (DOS) and its basic commands.

DISK OPERATING SYSTEM (DOS)

The Apple needs to know exactly how to interface with the disk drives. DOS is software to allow this. Users need to understand several DOS commands if they are working with programs directly. Commands may be typed whenever the Applesoft (]) or Integer ()) prompt is present on the screen.

At this point, the Apple II DOS Manual should be consulted. Chapters 2,3 & 4 are especially pertenant; listed here are the commands which are most important to understand:

Command	Result
PR#6	"boots" the disk (equivalent to CTRL-OPEN-APPLE)
INIT HELLO	erases disk, prepares it for storing programs and data. The name "HELLO" is conventional. Any filename can be typed here — but when the disk being INITed is booted, a program named HELLO (or filename) will be executed — if such a program exists on the disk. During the INIT process, whatever program happens to be in memory will be SAVEd automatically onto the disk and called HELLO (or filename).
CATALOG	prints table of contents of the disk on the screen
SAVE name	saves whatever program is currently in memory onto the disk with a name as specified*
LOAD name	loads a program with the specified name into the Apple's memory*
RUN name	loads a program with the specified name then immediately executes it*
DELETE name	erases the specified program or data file from the disk
LOCK name	protects a program or data file from accidental erasure or changing by preventing data to be written over it
UNLOCK name	unlocks the specified program or file

* Machine language programs, designated by "B" in the Catalog, use the commands BSAVE, BLOAD and BRUN.

THE DISK CATALOG

Typing CATALOG from immediate mode will cause the disk's table of contents to be displayed. Following the "VOLUME #", each file on the disk is listed together with some additional information. Since the catalog might be longer than one screenful, the blinking cursor may appear at the bottom of the screen with no prompt. If this happens, hitting the space bar will display additional catalog entries.

A typical catalog entry looks like this:

                    *A 008 HELLO

                    ^^   ^   ^
        locked (*) <--/¦ ¦   \--> file name
      or unlocked ( )   ¦ ¦
                         ¦ \-------> length of file (sectors)
                         ¦
      A pplesoft <--------/
      I nteger
      T ext
      B inary

DISK CARE

Each diskette is a small (about 5-inch diameter) plastic disk coated so that information may be stored on and erased from its surface. The coating is similar to the magnetic coating on recording tape. The diskette is permanently sealed in a square black plastic cover which protects it, helps keep it clean and allows it to spin freely. This package is never opened.

The term "floppy" comes from the fact that the diskette is flexible. Older computer invormation storage devices that worked on similar principles used rigid disks. While the diskette (and its plastic jcover) are somewhat flexible, actually bending the diskette can damage it. The disette cover contains both lubricants and cleaning agents to extend trouble free operation -- treat covers with respect.

Never let anything touch the brown or gray surface of the diskette itself. Handle the diskette by the black plastic cover only. When a diskette is not in use, keep it in the paper pocket that it came in. These pockets are treated to minimize static build-up which attracts dust. It is best to store diskettes vertically when they are not in use. A diskette holding bin is provided for that purpose.

Diskettes hold a tremendous amount of information: a single diskette can hold over 1,146,000 bits of information. An individual bit of information, therefore, occupies a very small portion of the sidkette. An invisible scratch on the surface of the diskette, or even a fingerprint, can cause errors. Do not place diskettes on dirty or greasy surfaces; do not let them collect dust.

To write on a diskette label, use a FELT TIP pen. Do not press hard. It is best not to write on a label attached to a diskette, but to write on the separate label, THEN attach it to the disk.

Keep diskettes away from magnetic fields. This means to keep them away from electric motors and magnets; they should not be placed on top of electronic devices such as the monitor. They may be temporarily laid on the Apple II or on the disk drive.

Diskettes are sensitive to extremes of temperature. Keep diskettes out of the sun, and away from other sources of heat that can cause them to warp and/or lose data. On hot days, car trunks (or dashboards) can be diskette killers. Diskettes operate satisfactorily up to 125 degrees F, which is not very hot. The first evidence of heat damage is a warped or bent black plastic cover.

With reasonable care a diskette will give you an average life of 40 hours -- which is a lot, when you consider the few seconds it takes to LOAD most programs. With just a little bit of carelessness, a diskette may give you no service at all.

DRIVE MAINTENANCE

Disk drives are the most trouble-prone of peripheral devices. They have a need for careful alignment (not user-adjustable) and rotation speed (user adjustable). The read/write "head" must be clean for reliable operation. The cable and integrated circuit chips seem to fail more frequently in disk drives than elsewhere due to frequent handling and use.

These rules apply when working with the disk drives:

1) Always turn Apple's power OFF when connecting or disconnecting the drive system.

2) Carefully check interface card and ribbon cable installation prior to re-applying power. The most frequent cause of disk failure is improper cable connection to the card. It is possible to plug the cable in backwards or to misalign it.

3) "Dress" the ribbon cables neatly; avoid kinks and crimps.

4) Keep magnets away from the disk drives and diskettes.